

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 15 is an improper dependent due to an improper dependency. The claim is claiming dependency upon itself and is being interpreted here as being dependent on claim 14.
3. Appropriate corrective action is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Regarding claim 16, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).
7. Appropriate corrective action is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 14, 15, 21, 22 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Fisher et al. (U.S. 2,064,529).
10. Fisher teaches a sewage sludge multi-digestion unit that utilizes an anaerobic process to treat the incoming waste. For claim 14, Fisher teaches that a batch of fresh sludge is supplied to a primary digester or pre-acidifier (col. 1 lines 23-25). When a new batch of fresh sludge is supplied to the primary digester (col. 1 lines 38-41), the displaced sludge is sent in an outflow stream to a secondary digester or fermenter where the desired digestion can be completed (page 1 col. 1 lines 46-48). The sludge from the primary digester is transported by a two-path or split delivery system such as gravity fed conduits (col. 3 lines 13-15) that allows for the automatic passage or transport means of sludge from the primary digester to the secondary digester (col. 2 lines 46-48).

11. For claim 15, Fisher teaches that the supernatant or top liquor is passed under controlled conditions from the first digester to the second digester (col. 3 lines 4-7) where the upper conduit or pathway allows the sludge to flow due to gravity (col. 3 lines 11-13) from the outflow stream due to being displaced by a new batch of fresh sludge.

12. For claim 21, Fisher teaches digesting a batch of fresh sludge in a primary digester or pre-acidifier (col. 1 lines 23-25). The sludge is provided in a continuous supply or in batches which displaces the sludge in the primary digester (col. 1 lines 38-41) where the outflow is sent to a secondary digester or fermenter for completing the desired level of digestion of the sludge (page 1 col. 1 lines 46-48). The sludge of the primary digester is transported by a two-path or split delivery system (transport means) by gravity fed conduits (col. 3 lines 13-15) that allows for the automatic passage of sludge from the primary digester to the secondary digester (col. 2 lines 46-48).

13. For claim 22, Fisher teaches the step of forming an active sludge or solids layer in the lower portion of the primary digester (col. 2 lines 11-14) and for claim 25 Fisher teaches using a top liquor or supernatant that exists with the active solids layer which is at the bottom of the primary digester (col. 2 lines 13-16).

14. Therefore, Fisher meets the limitations of claims 14, 15, 21, 22 and 25.

15. Claims 14, 15, 20, 21 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Reynell (U.S. 5,958,756).

16. With regards to claim 14, Reynell teaches a fluids digestion vessel (pre-acidifier) (Fig. 1) where the fluid from the fluid digester contains nutrients which are transferred to the solid digestion vessel or fermenter (col. 1 lines 12-14 & 59-60). The fluid from the

fluid digester is transferred to the solid digester by a pump (col. 3 lines 59-61) or transport means which feeds a fraction of the fluid to the solids digester (col. 1 lines 47-49) which reads on transport means are formed to selectively transport sufficiently pre-acidified materials.

17. Regarding claim 15, Reynell teaches a conduit or spillway so that the flow of liquid can occur by gravity (col. 3 lines 59-60) which is in the upper portion of the tank (Fig. 1). With regards to claim 20, Reynell teaches a sieve (Fig. 1) that removes large particles from the fluid waste (col. 4 lines 40-41) where the sieve is being interpreted as a mechanical pre-treatment to the fluid waste.

18. With regards to claim 21, Reynell teaches a fluids digestion vessel (pre-acidifier) (Fig. 1) where the fluid from the fluid digester contains nutrients which are transferred to the solid digestion vessel or fermenter (col. 1 lines 12-14 & 59-60). The fluid from the fluid digester is transferred to the solid digester by a pump (col. 3 lines 59-61) or transport means which feeds a fraction of the fluid to the solids digester (col. 1 lines 47-49) which reads on transport means are formed to selectively transport sufficiently pre-acidified materials. With regards to claim 26, Reynell teaches using a sieve (Fig. 1) to remove large particles from the fluid waste (col. 4 lines 40-41).

19. Therefore Reynell meets the limitations of claims 14, 15, 20, 21 and 26.

20. Claims 14, 18 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by von Nordenskjöld (DE 19804007).

21. For claim 14, von Nordenskjöld teaches an anaerobic treatment of waste water that includes a basin that has an acidifying range/chamber or pre-acidifier that transfers

the waste water to a high load range or fermenter where the anaerobic dismantling/processing of the organic contents occurs (page 2 lines 28-30, page 3 lines 20-21 of translation, Fig. 1 elements 3 and 7). The transfer of the waste water between the acidifying chamber and the high load or fermenter occurs via a dosing pump that draws the fluid from the bottom of the chamber (page 3 lines 12-14 of translation, Fig. 1 element 18) where the dosing pump is fully capable of selectively transporting the waste water. For claim 18, von Nordenskjöld teaches aerating the effluent with air or oxygen which reads on a floatation device (page 3 lines 10-11 of translation). Also, von Nordenskjöld teaches that a dosage pump pulls fluid from the bottom of the acidifying range (page 3 lines 11-12) or the lower portion of the pre-acidifier.

22. With regards to claim 21, von Nordenskjöld teaches using an anaerobic treatment of waste water that includes a basin that has an acidifying range/chamber or pre-acidifier that transfers the waste water to a high load range or fermenter where the anaerobic dismantling/processing of the organic contents occurs (page 2 lines 28-30, page 3 lines 20-21 of translation, Fig. 1 elements 3 and 7). The waste water is pumped between the acidifying chamber and the high load or fermenter occurs via a dosing pump that draws the fluid from the bottom of the chamber (page 3 lines 12-14 of translation, Fig. 1 element 18).

23. Therefore, von Nordenskjöld meets the limitations of claims 14, 18 and 21.

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

26. Claims 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over von Nordenskjöld (DE 19804007) in view of Mann (U.S. 2003/0213702).

27. For claim 16, von Nordenskjöld teaches that the effluent in the acidifying range is mixed with an agitator that is driven by a motor (page 3 lines 4-5 of translation, Fig. 1 element 4). While von Nordenskjöld does not specify that the mixer is a stirrer, but based on the figure of the reference, it is implied that the mixer is a mechanical agitator like a stirrer.

28. Mann discloses a waste disposal apparatus for receiving marine waste from a macerating marine toilet where the waste is sent to a disposal tank consisting of two chambers. The first chamber or electrolysis chamber holds the waste initially until the electrolysis chamber is flushed under the direction of an operator or a controller. With

regards to claim 16, Mann teaches an electronic controller that operates the waste treatment apparatus (page 4 [006] lines 1-3, Fig. 3 element 55). The controller of Mann monitors the level in the tank at a selected level in order to warn the operator that the tank is full (page 4 [0068] lines 2-4) or to discharge flocculation polymers to settle the solid portion of the waste out of solution (page 4 [0067] lines 10-12). It would be obvious to one of ordinary skill in the art to employ the controller as suggested by Mann within the teachings of von Nordenskjöld in order to control the level of waste within the tank. The suggestion for doing so at the time would have been in order to prevent surplus waste from accumulating in the chamber (page 5 [0068] lines 7-8).

29. For claim 19, von Nordenskjöld does not teach a controller that operates the floatation device and the withdrawal device.

30. With regards to claim 19, Mann teaches an electronic controller that operates the waste treatment apparatus (page 4 [006] lines 1-3, Fig. 3 element 55). The controller of Mann monitors the level in the tank at a selected level in order to warn the operator that the tank is full (page 4 [0068] lines 2-4) or to discharge flocculation polymers to settle the solid portion of the waste out of solution (page 4 [0067] lines 10-12). It would be obvious to one of ordinary skill in the art to employ the controller as suggested by Mann within the teachings of von Nordenskjöld in order to control the level of waste within the tank. The suggestion for doing so at the time would have been in order to prevent surplus waste from accumulating in the chamber (page 5 [0068] lines 7-8).

31. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over von Nordenskjöld (DE 19804007).

32. For claim 24, von Nordenskjöld teaches aerating the effluent with air or oxygen which reads on a floatation that is used to mix the fluid in the acidifying range/chamber (page 3 lines 10-11 of translation). Also, von Nordenskjöld teaches using the dosage pump to pull fluid from the bottom of the acidifying range (page 3 lines 11-12). However, von Nordenskjöld does not specifically teach that the mixing and withdrawing occur at least simultaneously, but it is implied within the teachings of von Nordenskjöld that aeration within the acidifying chamber occurs while the fluid is being withdrawn to the high load/fermenter. It would be obvious to one of ordinary skill in the art to employ the aeration and withdrawing means of von Nordenskjöld in order to maintain the suspension of the solids within the first chamber.

33. Claims 17 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reynell (U.S. 5,958,756) in view of Copa et al. (U.S. 4,919,815).

34. Reynell is silent regarding the limitations of claims 17 and 23.

35. Copa discloses a two-stage anaerobic/aerobic treatment for wastewater that removes the majority of the chemical oxygen demand (COD) from the wastewater. The tank includes a first anaerobic treatment zone followed by a second aerobic treatment zone. For claim 17, Copa teaches that the liquid in the anaerobic zone flows upward through a filter bed or sieve (col. 4 lines 49-51, Fig. 2 element 20) that retains some of the solids as the fluid flows to the aerobic zone. The transportation means of moving the fluid from the first tank to the second is due to an upward flow of air and liquid that is used to re-suspend the solids within the tank and promotes the flow of the waste fluid to the aerobic tank (col. 2 lines 34-36). The filter bed also serves to retain the majority of

solids within the first reactor which allows further treatment of the solids within the anaerobic vessel. It would have been obvious to one of ordinary skill in the art to employ the filter bed as suggested by Fisher within the teachings of Reynell in order to retain the solids within the fluid digester. The suggestion for doing so at the time would have been in order to minimize the amount of residual solids wasted during the treatment process (col. 2 lines 34-36).

36. For claim 23, Copa teaches using air and liquid to allow the liquid in the anaerobic zone to flow upward through a filter bed or sieve (col. 4 lines 49-51, Fig. 2 element 20) where some of the solids are retained and the fluid then flows to the aerobic zone. The filter bed allows the majority of the solids to be within the first reactor for further treatment within the anaerobic vessel. Therefore, it would have been obvious to one of ordinary skill in the art to employ the filter bed as suggested by Fisher within the teachings of Reynell in order to retain the solids within the fluid digester. The suggestion for doing so at the time would have been in order to minimize the amount of residual solids wasted during the treatment process (col. 2 lines 34-36).

Conclusion

37. References DE 19937876 & DE 4418060 from the international search report were not used in this office action, but are relevant to the application in that both references include the use of multiple chambers or vessels in treating waste water. However, the two references do not meet all the limitations of the claims. Furthermore,

DE 581860 and GB 2167055 also include a primary and secondary chamber/vessel, but do not meet all the limitations of the claims and where not used here.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL HOBBS whose telephone number is (571)270-3724. The examiner can normally be reached on Monday-Thursday 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William H. Beisner/
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MLH